

NATIONAL DEFENSE UNIVERSITY

NATIONAL WAR COLLEGE

TWO THEORIES ON THE USE OF AIR POWER: WARDEN VS. PAPE

Lt Col ANGELIQUE L. FAULISE, USAF

COURSE 5605

DOING MILITARY STRATEGY

SEMINAR K

PROFESSOR

CAPTAIN TIM HANLEY, USN

ADVISOR

COLONEL GARY WEST, USAF

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2003		2. REPORT TYPE		3. DATES COVERED 00-00-2003 to 00-00-2003	
4. TITLE AND SUBTITLE Two Theories on the Use of Air Power: Warden vs. Pape				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National War College, 300 5th Avenue, Fort Lesley J. McNair, Washington, DC, 20319-6000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 13	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

TWO THEORIES ON THE USE OF AIR POWER: WARDEN VS. PAPE

Beauty is in the eye of the beholder. Perhaps because the apparent target audience for John Warden's book, *The Air Campaign*, is the practitioner of the operational art, while Robert Pape seems to have written for the academic audience in *Bombing to Win*, this reviewer was compelled by Warden's argument that strategic use of air power is worthwhile—and left a bit bewildered by Pape's insistence that only tactical air power used at the theater level is worth the effort. The seeming rightness of *The Air Campaign* could also be explained by the fact that this generation of Air Force officers was raised on Warden's principles from the earliest days in professional military education classes. Regardless, there is benefit to viewing both sides of the debate to glean what lessons may be learned from history as well as understand current thinking on the appropriate use of air power.

This review will first look at each author's thesis and his supporting data and conclusions, as well as critique the information provided. It will then go on to compare and contrast the two works, and discuss why Warden's argument seems more valid than Pape's.

STRATEGIC AIR POWER WORKS

Colonel John Warden wrote *The Air Campaign* in 1986 while a student at the National War College. Several years after it was published, Colonel Warden served as the architect of the air campaign for the 1991 war against Iraq. The 2000 edition of the book contains a foreword and an epilogue incorporating examples from the Gulf War and clarifying Warden's ideas on centers of gravity and more strongly stating the case for strategic use of air power. The purpose of the book, in the author's words, is to provide "a philosophical and theoretical framework for conceptualizing, planning, and executing an air campaign."¹

The work actually has two theses. The first postulated in the new foreword is that concentrating efforts against strategic targets, especially with the availability of precision and stealth, provides more rapid and economic attainment of objectives than focusing on tactical or operational targets. Warden even believes it is possible to “win major competitions without ever dealing with the opponent’s fielded forces.”² The original thesis is “air superiority is crucial, that a campaign will be lost if the enemy has it, that in many circumstances it alone can win a war, and that its possession is needed before other actions on the ground or in the air can be undertaken.”³ Rather than systematically proving either the new or old thesis, Warden goes about his stated purpose of providing a framework for air campaign planners to use, and in doing so attempts to illustrate the validity of his theses. This forces the reader to draw conclusions based on the historical examples and general guidelines presented.

Warden begins by describing four levels of war, in terms of decreasing responsibility from grand strategic to tactical. The differentiation between the levels of war sets the stage for later discussions on the use of air power against strategic targets. He also introduces the Clausewitzian concept of “center of gravity”—the point at which the enemy is most vulnerable and attack will have the greatest chance of being decisive.⁴ Based upon determining the enemy center of gravity, the commander can decide which type of arms to employ, land, sea, or air. And if the commander selects air there are several types of missions from which to choose in order to strike the center of gravity: air superiority, direct attack, interdiction, and close air support. The bulk of the book then covers three of the air missions, curiously slighting direct attack.

Warden devotes four of ten chapters to one mission, air superiority, which he defines as having sufficient control of the air to make air attacks on the enemy without serious opposition and to be free of serious enemy air incursions.⁵ He emphasizes that since 1939, no state has lost

a war while it maintained air superiority—conversely no state has won without it. In the discussion of offensive versus defensive air superiority, Warden states that offense is the stronger form of air because it seizes the initiative and inherently puts pressure on the enemy. He says in his chapter on offensive operations, “that the air superiority campaign must be given great thought—as an end in itself, or as a means to an end.”⁶ He draws this end-in-itself conclusion from America’s achieving air superiority over Japan, and Japan’s subsequent surrender. The reviewer must question whether air superiority or the direct/strategic attacks it enabled was decisive.

Warden does not recommend a defensive approach to air superiority as it requires at least one for one aircraft ratios to defeat an enemy attacker.⁷ The key to successful defense is having equivalent or greater mass; and the key to mass is early detection and warning. And his final chapter on air superiority covers the case where neither side has it, or even the wherewithal to strike deep inside the other’s territory. When options are limited, the only way to secure air superiority is to destroy the enemy in the air. The theme running through all the chapters on air superiority is that numeric and qualitative superiority are extremely important.⁸

At long last, Warden moves on to another air mission, interdiction, which he defines as the disruption of lines of communication. Its effectiveness is tied to the friendly or enemy ground situation. The bottom line on interdiction is that it must be sustained and concentrated if it is to be effective. It can be used to prevent the enemy from massing, to prevent action by the enemy reserve forces, and to harass a retreating enemy. However it is not effective, for obvious reasons, against self-sufficient forces. Warden also discusses where to interdict, a possible point of contention between air and ground commanders, but makes no recommendations. He does say though that distant (at the source) interdiction has the greatest potential to be decisive because it

can affect the whole theater. But he warns that there will be a large time lag from destruction to noticeable results on the battlefield. He closes the chapter with the admonition that interdiction should not be done at the expense of a more important mission, like air superiority.⁹

The final air mission Warden covers is close air support (CAS). Interestingly, he defines CAS as “any air operation that theoretically could and would be done by ground forces on their own, if sufficient troops or artillery were available.”¹⁰ His point is this: It is important to differentiate between CAS and all other air operations due to the ground commander’s ability to control CAS assets. If CAS is defined too broadly, then the ground commander may exercise too great a control over air assets, which could lead to other more important missions for the overall effort being ignored. Parochialism, in a non-pejorative sense, is inevitable—and rightly so. The ground commander must focus on the immediate front and moving lines on a map. The air commander is trained to look at cumulative effects that may come to fruition weeks in the future. Ultimately it is the theater commander who must decide on which air mission gets the emphasis, with advice from his air and ground component commanders who are thoroughly grounded in their respective doctrine, knowing what they each bring to the fight.¹¹ Warden recommends using CAS as an operational reserve, to support a break through or prevent the enemy from doing the same, to cover the ground flank, or for bursts of power or shock, but not for long-term coverage. CAS works best in a dynamic ground situation versus against a dug-in enemy. And CAS always has a cost in lost opportunities for attacking other targets.¹²

A brief chapter covers the use of an air reserve force, a topic that Warden thinks is often neglected by airmen. Much as reserves are used in surface warfare, air reserves allow commanders to exploit an error or failing by the enemy, or save them from their own. Because war is a human activity, it is unpredictable. Therefore reserves are important. Warden cautions

against using the reserves piecemeal, but recommends using them to dramatically reshape the situation. He says they are most important when friendly forces are equal or at a disadvantage to the enemy.¹³

The final two chapters, covering the orchestration and planning of the air war, could be the focus of the whole book, tying all the concepts together. But as one National War College instructor was once heard to say, “I expected a double scoop, and all I got was a kiddie cone.” Perhaps Colonel Warden did not want to belabor points already made. Or perhaps with further contemplation of the issue, he came to greater clarity on appropriate use of air power (as evidenced in his revised foreword and epilogue, stressing the importance of using air to strike strategic targets to perhaps decisively bring about the desired objective). Regardless of the reason for their lack of depth, the final chapters remind us of lessons passed on from the masters of military strategy and provide analogies to help us better understand them.

Warden does raise valid issues with regard to planning that are critical for air and ground commanders to understand. The first is to beware siphoning off air forces for use in “emergency situations,” like a fast-moving enemy ground advance. Unless it is truly critical, this reduces the effectiveness of air against other more important targets and also may put friendly air at greater risk because enemy air can mass against them. The second thorny issue is in determining the relative effort between interdiction and CAS. Interdiction has historically been easier to do than CAS, and in time may ultimately be more effective—a bomb on a tank factory destroys more tanks than a bomb on the battlefield. Finally, when conducting simultaneous air superiority, interdiction, and CAS operations, a careful analysis of the situation should reveal which mission should get the emphasis. Fair sharing is almost never the answer. Air superiority should take priority with the other two missions conducted as able. The only additional new information in

the final chapter comes in the form of a suggestion to train the way you intend to fight, particularly with regard to large formations.¹⁴

As mentioned before, the epilogue refocuses on the key concepts of air power's ability to strike enemy strategic centers of gravity. Warden brings in the concept of attacking the enemy system in parallel, rather than serially, by taking advantage of precision and stealth. This bolsters the notion of the ability to strike decisively and with greater efficiency. Armed with examples from the Gulf War, Warden shows the efficacy of strategic attack.¹⁵ Perhaps another edition where he significantly revises the full text to incorporate these ideas would be in order.

DENIAL—THE ONLY PATH TO SUCCESS

In his book, *Bombing to Win*, Robert Pape takes an academic approach, working from a macro-level definition of military coercion, narrowing the focus to coercive air power, and then providing historical evidence of uses of coercive air power. His thesis is that strategic attack does not work to coerce the enemy. The only effective use of coercion is denial (which he defines as attacking the enemy's military strategy) using theater air assets to target fielded forces and conduct operational interdiction. Though he has never been an air power practitioner, he is an acknowledged scholar in the field. Pape wrote this book while an Assistant Professor of Government at Dartmouth College, and has served on staff for the Air Force's graduate-level School of Advanced Air Power Studies.

Very early in his work, Pape acknowledges there are differences in the coercive effects of nuclear versus conventional due to the vast gap in destructive power.¹⁶ Though he does not discount nuclear attack, the bulk of the book discusses the conventional use of air power for coercive purposes.

Pape defines military coercion as an attempt to achieve political objectives “on the cheap,” compared to achieving total military victory over an enemy.¹⁷ As the use of coercive force approaches the level needed to militarily defeat the enemy, it is no longer cheap. At the point where military victory is achieved, coercion has failed. He expresses coercive logic in an equation, $R = B p(B) - C p(C)$, where R is enemy resistance, B is benefit of resistance, C is cost of resistance, and $p()$ is the probability of attaining benefits or suffering costs. Once costs are perceived to be greater than benefits ($R < 0$), then the enemy can be expected to make concessions.¹⁸ It is interesting that he uses this equation to describe coercive logic because it could also be used to describe the situation where an enemy is militarily defeated. Regardless, it seems pointless to express this very human interaction in mathematical terms, but he uses the calculus throughout the book—perhaps it may help some readers to conceptualize his point.

The real nuggets to pull out of his introduction to military coercion are the four basic strategies for its use: punishment, risk, decapitation, and denial.¹⁹ Punishment seeks to increase the costs to enemy civilians; risk also targets enemy civilians, but in an incremental way allowing the enemy to contemplate the possible next strike; decapitation targets political and military leadership and their command and control structures; finally, denial takes aim at the enemy’s military ability to protect territory or achieve objectives.

Pape states, “No one coercive strategy is likely to succeed under all circumstances. Still there are conditions under which one strategy is more likely to succeed than another. Specifically, in conventional disputes, coercion is most likely to succeed when directed at military, not civilian, vulnerabilities.”²⁰ The converse is true in nuclear disputes. Throughout the book, it is an either-or proposition. What Pape never explores is the possibility that a combination of coercive strategies, with potentially synergistic effects, could be very successful.

There are a number of reasons punishment does not work, according to Pape. Most disputes where coercion would be used involve nationalistic ideals that tend to make people more willing to bear great hardship. Pape also argues that it is difficult to inflict great damage on a large portion of the population with conventional weapons, and that states are able to find coping mechanisms and work-arounds to the destruction. What punishment does cause is anger against the attacker, and may even strengthen popular support of the target government.²¹ Pape asserts risk is even less effective than punishment because it focuses on the same targets, but allows greater time for the enemy to compensate—and may even signal an unwillingness on the part of the attacker to escalate beyond current levels.²²

Regarding decapitation, besides being extremely dependent on timely intelligence, Pape states idiosyncratic leadership is rare. Therefore even without the leader, the state is likely to go on in the same vein. There is also the issue of predicting succession if an idiosyncratic leader is removed—in a coercive scenario, the following regime could be even worse. Decapitation along command and control lines is also unlikely to produce strategic paralysis because of redundant and back-up systems, the relatively low volume of strategic direction needed during a conflict, and authority delegated to lower levels.²³

Pape's main thrust is that of the coercive strategies, all of which are difficult, denial is the most likely to succeed. And based on the variables of civilian vulnerability and military vulnerability, he is able to predict (with great accuracy) the success or failure of coercion. He bases these assertions on 33 cases using coercive air power, five of which he uses as in-depth case studies to make the point in greater detail.²⁴

Though well researched and copiously documented, the conclusion Pape reaches from each of the case studies (Japan, 1944-1945; Korea, 1950-1953; Vietnam, 1965-1972; Iraq, 1991; and

Germany, 1942-1945) is open to considerable interpretation. A couple of examples will serve to illustrate my point.

Pape makes the argument it was the increase in military vulnerability, with the Americans on Okinawa and the Soviets in Manchuria, that caused the Japanese to surrender before being militarily defeated.²⁵ He further asserts, “In any case, the atomic bombings were not decisive even in the timing of the surrender.”²⁶ Despite his careful review of primary documents and post-war interviews with Japanese officials, which he says proves his denial theory, completely discounting the psychological effect of the nuclear attacks on leadership’s decision to surrender just does not make sense. From a common sense stand point, the cumulative effects of three and a half years of war with increasing deprivation, vulnerability of the homeland to conventional air attack, American and Soviet ground forces on their door step, and the horror of the nuclear destruction of two cities surely caused the Japanese to surrender rather than fight to total destruction.

The Iraq case study asserts “denial and not decapitation accounts for Iraq’s willingness to abandon Kuwait.”²⁷ Again it is much more likely a combination of the strategies to target the leadership, command and control, as well as the fielded forces that caused Saddam Hussein to surrender. Even today one may only draw inferences as to the cause. Only in the last few weeks, since the fall of Baghdad, is it even conceivable to gather evidence from primary documents or interviews. So it is very premature to say that only the denial strategy caused the regime to surrender. It is this type of bald assertion that calls into question the impartiality of Pape’s scrutiny of other documents in support of the other case studies.

SO WHO'S RIGHT?

Both works are of great value to anyone interested in air power. Pape and Warden are both air power advocates. They both stress the importance of leaders thinking critically about the most appropriate use of air power. And both use historical examples to illustrate their respective point of view. That is where the similarity between the two ends.

While Pape uses a pseudo-scientific approach to “proving” his hypothesis with equations, statistical-correlative tests, variables, and analyses, Warden makes his case through intuitive prescriptions and “telling a story” with historical examples. Warden targets an audience of operational practitioners, while Pape’s audience is likely to be more academic. They obviously come to nearly polar-opposite conclusions on the appropriate use of air power to achieve the objective, be it coercion or military defeat.

What convinced this reviewer of the value of Warden’s point of view is the fact that he acknowledges the need to use all the missions of air power in order to be successful. And though he certainly assigns priority to air superiority (his assertion that it could be an end in itself is flawed), he addresses the appropriate use of interdiction and CAS in support of the theater commander’s priorities. The sole mission area that lacked sufficient discussion in *The Air Campaign*, particularly based on the revised foreword and epilogue, was direct or strategic attack. But the principles laid out in the later sections are compelling—strategic attack has the potential, particularly with the advent of precision and stealth, to be decisive.

Whether the reader is excited or turned off by the “scientific” method by which Pape presented his case, the carefully constructed arguments and systematic way he laid out his hypothesis and looked at every case study was very informative. Pape’s line of reasoning was very well explained, and left the reader with no doubt as to his position on which strategy is

effective—“It’s denial, stupid!” But his seemingly hard-line stance against the efficacy of the other strategies, and even more his failure to address the possibility that a combination of strategies has been effective and could be coercive in the future, left this reviewer wondering why he was trying so hard. Call me stupid. Pape’s argument just didn’t pass the giggle check.

¹ John A Warden III, The Air Campaign (San Jose: toExcel, 2000), xv.

² Warden, x.

³ Warden, 141.

⁴ Warden, 7.

⁵ Warden, 10.

⁶ Warden, 54.

⁷ Warden, 57.

⁸ Warden, 66-70.

⁹ Warden, 71-85.

¹⁰ Warden, 87.

¹¹ Warden, 87-88.

¹² Warden, 90-96.

¹³ Warden, 98-108.

¹⁴ Warden, 132-139.

¹⁵ Warden, 144-160.

¹⁶ Robert A. Pape, Bombing to Win: Air Power and Coercion in War (Ithaca: Cornell University Press, 1996), 9,10-11.

¹⁷ Pape, 13.

¹⁸ Pape, 16.

¹⁹ Pape, 18-19.

²⁰ Pape, 19.

²¹ Pape, 21-25.

²² Pape, 28.

²³ Pape, 84-85.

²⁴ Pape, 48.

²⁵ Pape, 115-126.

²⁶ Pape, 128.

²⁷ Pape, 213.

Bibliography

Pape, Robert A. Bombing to Win: Air Power and Coercion in War. Ithaca: Cornell University Press: 1996.

Warden, John A. III. The Air Campaign. San Jose: toExcel, 2000.